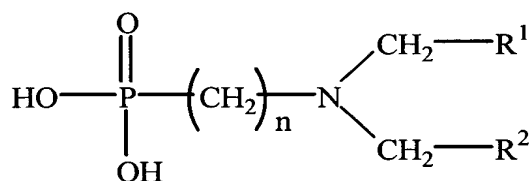
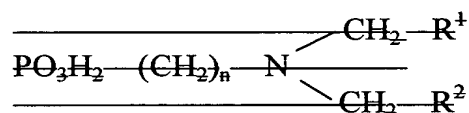


SPECIFICATION AMENDMENTS

Replace paragraph [0006] with:

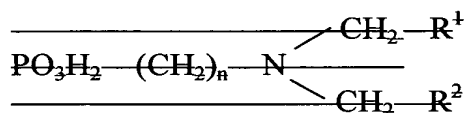
The invention provides a chemical-mechanical polishing system for a substrate comprising (a) a liquid carrier, (b) a polishing pad and/or an abrasive, (c) a per-type oxidizer, and (d) an additive. The additive is of the formula

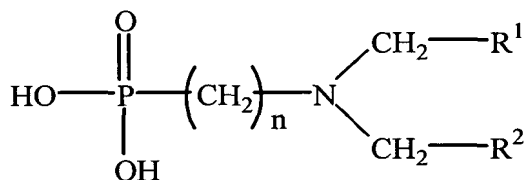


wherein R¹ is a phosphono group, a carboxyl group or a salt thereof, R² is a phosphono group, a carboxyl group or a salt thereof, and n is an integer from 1 to 50. The invention also provides a method of polishing a substrate comprising (a) contacting a substrate with the aforementioned polishing composition and (b) abrading at least a portion of the substrate to polish the substrate. When the substrate is a nickel-containing substrate, the additive additionally can be either 1,2,4-triazole or piperazine.

Replace paragraph [0007] with:

The invention provides a chemical-mechanical polishing system for a substrate. The chemical-mechanical polishing system comprises (a) a liquid carrier, (b) a polishing pad and/or an abrasive, (c) a per-type oxidizer, and (d) an additive. The additive is of the formula

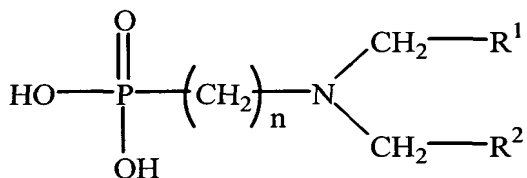
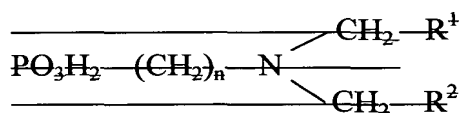




wherein R¹ is a phosphono group or a carboxyl group, R² is a phosphono group or a carboxyl group, and n is an integer from 1 to 50. The liquid carrier, the abrasive (when present and suspended in the liquid carrier), the per-type oxidizer, and the additive, as well as any other components suspended in the liquid carrier, form the polishing composition of the CMP system.

Replace paragraph [0013] with:

The CMP system further comprises an additive. The additive is of the formula



wherein R¹ is a phosphono group or a carboxyl group, R² is a phosphono group or a carboxyl group, and n is a positive integer from 1 to 50.

Replace paragraph [0031] with:

The first, second, and third CMP systems (control) contained 1 wt.% glycine, 1 wt.% nitrilotriacetic acid, and 1 wt.% 2-aminoethyl dihydrogen phosphate, respectively, as the additive (CMP Systems 1A, 1B, and 1C, respectively). The fourth and fifth CMP systems (inventive) contained 1 wt.% N-(phosphonomethyl) iminodiacetic acid and 1 wt.% of nitrilotris (methylene) ~~triphonic~~ triphosphonic acid, respectively, as the additive (CMP Systems 1D and 1E, respectively).

Replace paragraph [0032] with:

The test wafers were first subjected to the same CMP system as a “first-step polishing process” so as to obtain test wafers with an average surface roughness (Ra) of 30 to 45 Angstroms. These test wafers then were subjected to each of the aforementioned five CMP systems as a “second-step polishing process.” The CMP composition flow rate of 100 ml/min, the down force of 50 N, and the pad rotation speed of 150 revolutions per minute were maintained constant for each of the five CMP systems. The removal rate and the achieved substrate roughness were determined for each of the five CMP systems. The relative removal rates for each CMP system, determined in relation to the other systems using CMP System 1A as the baseline (i.e., removal rate of 1.0) also was determined. The resulting data is set forth in Table 1 below.

CMP System	Additive	Removal Rate (Å /min)	Relative Removal Rate	Substrate Roughness (Å)
1A (Control)	glycine $\begin{array}{c} \text{H} \\ \diagup \\ \text{H}-\text{N} \\ \diagdown \\ \text{CH}_2-\text{COOH} \end{array}$	1067	1.0	1.9
1B (Control)	nitrilotriacetic acid $\begin{array}{c} \text{CH}_2-\text{COOH} \\ \diagup \\ \text{COOH}-\text{N} \\ \diagdown \\ \text{CH}_2-\text{COOH} \end{array}$	660	0.6	2.3
1C (Control)	2-aminoethyl dihydrogen phosphate $\text{PO}_3\text{H}_2-\text{CH}_2-\text{CH}_2-\text{NH}_2$	813	0.8	2.0

<p>1D (Inventive)</p>	<p>N-(phosphonomethyl)- iminodiacetic acid</p> $ \begin{array}{c} \text{CH}_2\text{---COOH} \\ \text{PO}_3\text{H}_2\text{---CH}_2\text{---N} \diagup \\ \text{CH}_2\text{---COOH} \diagdown \end{array} $ $ \begin{array}{c} \text{O} \\ \parallel \\ \text{HO---P---CH}_2\text{---N} \begin{array}{l} \diagup \text{CH}_2\text{---COOH} \\ \diagdown \text{CH}_2\text{---COOH} \end{array} \\ \\ \text{OH} \end{array} $	<p>1575</p>	<p>1.5</p>	<p>2.0</p>
<p>1E (Inventive)</p>	<p>nitrilotris (methylene) triphonic <u>triposphonic</u> acid</p> $ \begin{array}{c} \text{CH}_2\text{---PO}_3\text{H}_2 \\ \text{PO}_3\text{H}_2\text{---CH}_2\text{---N} \diagup \\ \text{CH}_2\text{---PO}_3\text{H}_2 \diagdown \end{array} $ $ \begin{array}{c} \text{OH} \\ \\ \text{HO---P=O} \\ \\ \text{CH}_2 \\ \\ \text{HO---P=O} \\ \\ \text{OH} \end{array} $ $ \begin{array}{c} \text{O} \\ \parallel \\ \text{HO---P---CH}_2\text{---N} \begin{array}{l} \diagup \text{CH}_2\text{---P(=O)(OH)}_2 \\ \diagdown \text{CH}_2\text{---P(=O)(OH)}_2 \end{array} \\ \\ \text{OH} \end{array} $	<p>1270</p>	<p>1.2</p>	<p>2.1</p>

Replace paragraph [0035] with:

Inventive CMP System 1E also exhibited an increased removal rate when compared to the control CMP Systems 1A-1C. CMP System 1E, prepared using an additive of nitrilotris (methylene) ~~triphonic~~ triposphonic acid, exhibited a removal rate that was nearly 20% better than that of control CMP System 1A, over 50% better than that of control CMP System 1C, and nearly 100% better than control CMP System 1B. In addition, the use of

In re Appln. of Fang
Application No. 09/975,335

inventive CMP System 1E resulted in a surface roughness very similar to that associated with control CMP Systems 1A–1C.